E-cooling Experiment High Beta Cavity & Cryomodule
BNL 703.75 MHz Superconducting Linac Development

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Final Design Review

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Brookhaven National Laboratory

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This work prepared for Brookhaven National Laboratory under Contract Number 70819

Outline

- Introduction
- Accomplishments Phase I
- Technical Approach - Second Year
- Manufacturing Schedule Assessment -Top Level Phase II

Introduction

The Final Design Review (FDR) is a major milestone of the e-Cooling Experiment Technology Development Phase and will address the mechanical design and analytical progress on the elliptical cavity, helium vessel and cryomodule components. It was a combined effort between Brookhaven Laboratory and AES and utilized a multi-disciplined philosophy comprised of engineering design, RF / FEA analysis and manufacturing producibility.

Accomplishments Phase I

-Completed Mechanical Design and FEA of 5 cell RF Cavity, He Vessel, Power Coupler, & Cryostat

-Interfaces to external piping for both cold and warm connections defined

-Instrumentation type , locations and method of installation well defined

-Manufacturing Plan and Production Readiness approved and Manufacturing drawings required for niobium fabrication in process

-Manufacturing forming, assembly and tuning fixtures for cavity are complete

-Engineering Design, Manufacture and Testing @ AES nearing completion on two (5) cell copper cold models

. Adjustable HOM filter position and orientation for testing versatility

. Completed manufacturing drawing package delivered to BNL

-All Government Furnished niobium and niobium titanium has been received at the AES facility and a Certificate of Compliance has been provided to BNL

TECHNICAL APPROACH - PHASE II
SECOND YEARS WORK

- Fabrication of niobium Cavity and associated components, He Vessel, Cryostat, Magnetic / Thermal Shielding and Support Structure.

. All niobium end/mid half cells plus spares have been hydroformed

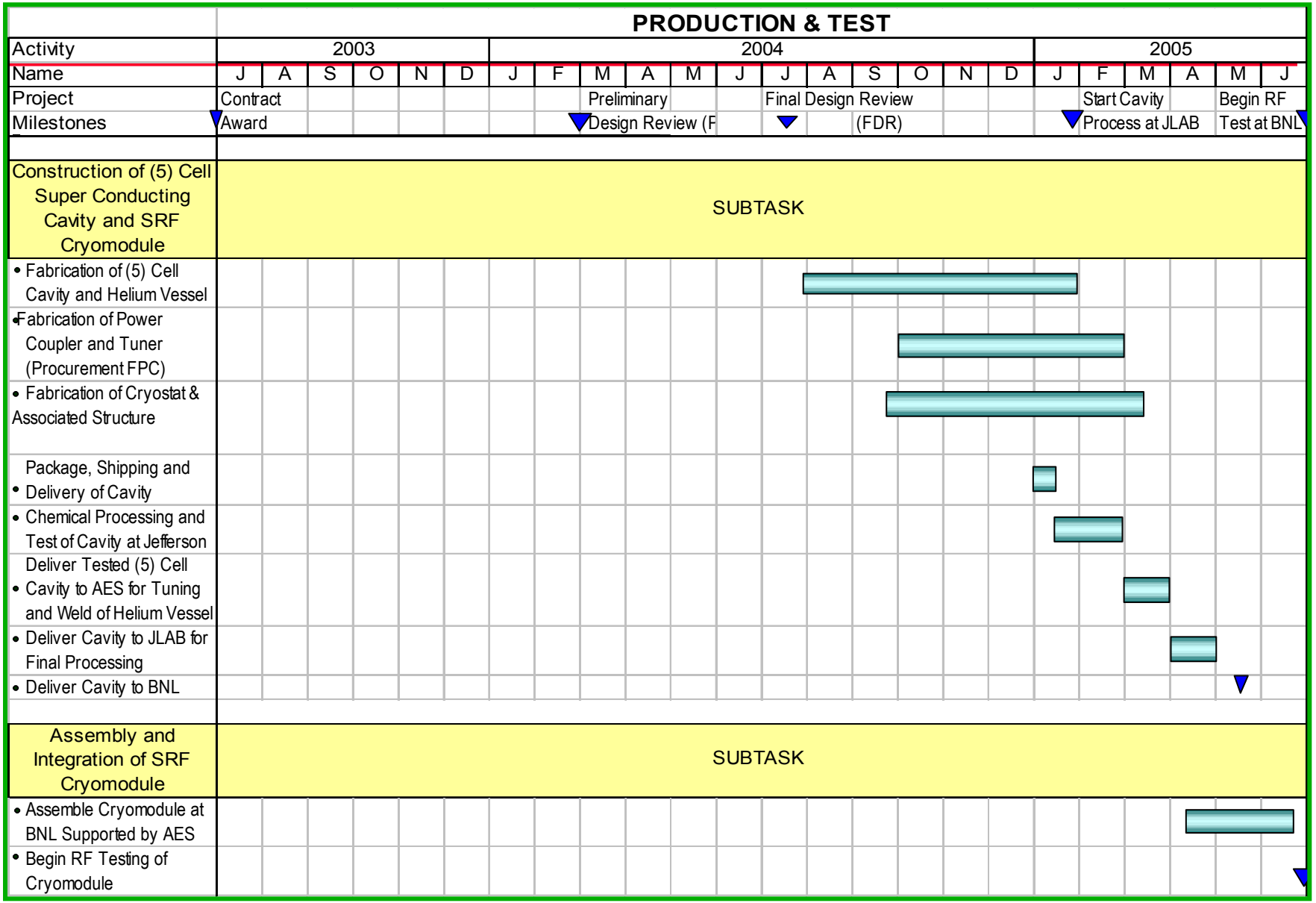
- Chemical Processing and Test @ Jefferson Laboratory.

-Return tested cavity to AES for tuning and welding of Helium Vessel

-Final Processing @ JLAB During APRIL, 2005

- Integration and Test of SRF Cryomodule at BNL begins MAY, 2005.

-All Engineering Design And Manufacturing skills in place.


PRODUCTION & TEST
Activity
2003
2004
2005
Name
J A S O N D J F M A M J J A S O N D J F M A M J
Project Milestones
Contract Award
Preliminary Design Review (F
Final Design Review (FDR)
Start Cavity Process at JLAB
Begin RF Test at BNL
Construction of (5) Cell Super Conducting Cavity and SRF Cryomodule
SUBTASK
• Fabrication of (5) Cell Cavity and Helium Vessel
• Fabrication of Power Coupler and Tuner (Procurement FPC)
• Fabrication of Cryostat & Associated Structure
• Package, Shipping and Delivery of Cavity
• Chemical Processing and Test of Cavity at Jefferson
• Deliver Tested (5) Cell Cavity to AES for Tuning and Weld of Helium Vessel
• Deliver Cavity to JLAB for Final Processing
• Deliver Cavity to BNL
Assembly and Integration of SRF Cryomodule
SUBTASK
• Assemble Cryomodule at BNL Supported by AES
• Begin RF Testing of Cryomodule